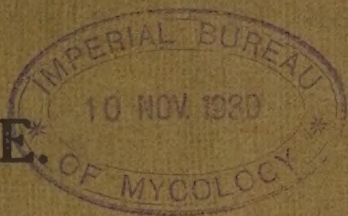




SIERRA LEONE.



Annual Report

OF THE

Agricultural Department

For the Year 1929.

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Annual Report of the Agricultural Department for the Year 1929.

AGRICULTURAL DEPARTMENT,

NJALA,

7th May, 1930.

THE HONOURABLE THE COLONIAL SECRETARY, FREETOWN.

SIR,

I have the honour to submit herewith the annual report of the Agricultural Department for the year ended 31st December, 1929.

2. *Organization.*—On the 1st of January, the Lands and Forests Department was split into two departments, the Agricultural Department and the Forestry Department. The new Agricultural Department includes the old headquarters staff, the Division of Agriculture, the Division of Research and the Division of Inspection of Plants and Produce.

3. *Staff.*—The Director of the Department from 1st January, until his retirement on 11th August, was Mr. D. W. Scotland, and it is with much regret that I record his departure from the Colony. His energy, experience and tact are well known and will be a great loss to the Department. I acted as Director of Agriculture from 11th August, until the end of the year. The new Director, Mr. A. H. Kirby, O.B.E., late Director of Agriculture, Tanganyika, has been appointed, and much is expected from his ripe experience and considerable knowledge of tropical countries. He is expected to arrive in May.

Mr. P. J. Moss, Provincial Superintendent of Agriculture went on leave on 17th April pending being seconded to the Education Department. Mr. D. C. Edwards, Agricultural Instructor, was transferred to Kenya Colony and left this Colony on 20th October. Both these officers carry with them the best wishes of the department.

4. The year 1929 has been a year of many changes and this has to some extent hampered the work of the department. To begin with the department was first split off from the Lands and Forests Department and Mr. Scotland was placed in charge. In August he retired. In November we received a visit from Mr. F. A. Stockdale, C.B.E., Agricultural Adviser to the Secretary of State. I accompanied Mr. Stockdale in a quick tour round the more important agricultural stations and discussed with him various aspects of administration, propaganda and research. As a result of this visit, Mr. Stockdale submitted a report to His Excellency the Governor embodying certain suggestions for the re-organization of the department. These suggestions were considered and accepted by His Excellency and a despatch sent to the Secretary of State recommending their adoption in Sierra Leone. In the meantime I was instructed to anticipate the approval of the Secretary of State, which has since been received, and to carry on accordingly.

5. Mr. Stockdale's report, His Excellency's despatch and the Secretary of State's reply have been published as a Sessional Paper (No. 2 of 1930) and there is no need for me to recapitulate here.

6. In December, Mr. H. C. Sampson, C.I.E., Economic Botanist, Kew, (late Director of Agriculture, Madras) visited Sierra Leone. He was taken on a tour which included the Scarcies, Port Loko, Batkanu, Makump, Njala, Bo, Pujehun, Bonthe, Sembehun, Moyamba and Newton. Mr. Sampson's discussions with the various agricultural officers he met were of great service to the department. He is writing a report on his tour which I hope to receive shortly.

7. *Second West African Agricultural Conference.*—The Second West African Agricultural Conference was held in October and the Sierra Leone delegates were Mr. Hargreaves and myself. The conference was very instructive and much insight was gained into native agricultural conditions, administration and research on the Gold Coast which have a definite application in this Colony. The proceedings of the conference have

not yet been published, but should be published shortly. I do not, therefore, propose to give a resumé here of the part played by Sierra Leone other than quoting the following papers which were prepared and placed before the conference by members of his department. The papers submitted were:—

- (1) "The prospects of a fruit export industry in Sierra Leone" by D. W. Scotland and F. J. Martin.
- (2) "Notes on West African soils" by F. J. Martin and H. C. Doyne.
- (3) "A brief note on the progress of oil-palm investigations in Sierra Leone" by D. W. Scotland and F. J. Martin.
- (4) "Produce Inspection in Sierra Leone" by F. J. Martin and G. Tuach.
- (5) "Need for further research facilities in West Africa; proposal for a research station for oil-palms and laterite soils" by F. J. Martin.

8. *Agricultural Crops*.—There has been an appreciable increase in the production of the following crops—swamp rice, coffee and cocoa, while the introduction of a good type of Nigerian oil-palms into Sierra Leone has been attended with considerable success. The only bar to further expansion in the case of coffee and oil-palms was lack of suitable seed. The actual work done in the various provinces is shown in extracts from the reports of Provincial Superintendents of Agriculture given in Appendix I.

9. *Oil-palms*.—The Departmental Plantation at Mabang absorbed practically the whole of our small local supply of Nigerian oil-palm seed and the supply to native plantations was limited. Now that the greater part of the requirements of this plantation have been met, there will be a more abundant supply available for native planters.

Progress is being made at the Government Oil-Palm Plantation at Mabang. During the past year vacancies in all the existing plots were filled. These vacancies were very numerous owing to a plague of rats which attacked and ate the palm cabbages and so destroyed the palms. Some 13,600 seedlings were used for beating up these failures thus using up nursery stock which was intended for new areas. The only fresh area planted was a block of some thirty acres of Deli palms from seed received from Sumatra.

The nursery work was re-organized late in 1928 and as a result of a strong nursery programme during 1929, over 100,000 seedlings were pricked out into beds during last year. This will provide ample for our planting programme of 800 acres for 1930 and there will be an adequate margin to allow for beating up failures and for the discarding of weakly seedlings.

The building on the plantation during 1929 included the erection of a European rest-house, a canteen, a house for the African clerk and quarters for 180 labourers. A pumping plant was installed to water the nursery and two 700-gallon tanks were erected. By this means it is hoped that the nursery will be carried over the dry season without suffering from lack of water.

In the provinces the five acre demonstrations of cultivated "wild" palm stands have been continued. These plantations now present a good appearance. The young palms are growing vigorously and are now beginning to come into bearing.

In the Northern Province some thirty-three small demonstration plantations of oil-palm have been made. The seed used was obtained from the Nigerian oil-palms at Njala, and these young plantations are reported to be doing well. Many natives appear quite keen to plant good types of Nigerian oil-palm which are far more valuable than the local variety. This method of encouraging the development of oil-palm cultivation appears far more likely to succeed than the cultivating of "wild" stands and costs the department far less money as the natives, provided they get a good type of palm, appear willing to provide the labour themselves. They are not willing to do this in the case of clearing "wild" palm stands.

10. *Rice*.—There is a very appreciable increase in the cultivation of swamp rice in inland swamps. Demonstration farms have been made all over the country and the native cultivators are taking up this form of rice growing. In addition to the planting of swamp rice the natives are now being encouraged to grow sweet potatoes as a dry season crop following the rice. This rotation has been practised with success for some years in some parts of the Northern Province and the Provincial Superintendent of Agriculture, Northern Province (Mr. R. R. Glanville), records that he is certain the cultivation of potatoes has a good effect on the following rice crop. This is probably due to the fact that the land is kept much cleaner if sweet potatoes are growing than if nothing is cultivated during the dry season.

In the tidal areas, the Great and Little Scarcies, swamp rice growing has reached a comparatively high level for West Africa. There are, however, many ways in which it can be improved; these were discussed by Messrs. Stockdale and Sampson during their visits and as a result it has been decided to send one of our officers to study rice problems in those parts of India and Ceylon where conditions prevail which are similar to those in the Scarcies area.

11. *Cocoa*.—The area under this crop spreads slowly. The natives appear quite willing to grow cocoa, but it is doubtful if very large areas exist where the soil and other conditions are suitable. There have been many disappointments with this crop owing to indiscriminate planting in unsuitable places and the department now only encourages planting in those situations which appear particularly favourable to the growth of this crop.

12. *Coffee*.—There is a tremendous keenness on the part of the natives to grow coffee. This is curious as there has been no intensive propaganda nor any organized buying on the part of European firms. At the West African Agricultural Conference a similar keenness was reported in the Gold Coast and parts of Nigeria. There is little doubt that coffee is a much harder crop than cocoa under the conditions prevailing in Sierra Leone. As will be seen from the reports of the Provincial Superintendents of Agriculture (Appendix I.) there has been a great spread in the cultivation of coffee all over the Protectorate.

13. *Coconuts*.—During the past six or seven years the planting of coconuts has been carried out on so-called communal lines and chiefly in the Southern Province. This was done with the full approval of the Provincial Commissioner, but it now appears that this method has certain defects. As no one has any individual ownership, no one troubles to clean the communal plantations, and when the plantations actually come into bearing the vexed question of ownership will have to be settled. In consultation with the Provincial Commissioner, Southern Province, it was decided that no more communal plantations should be established, that the ownership of the individual trees should be settled before the trees come into bearing, and that, in future, the natives should be encouraged to plant up coconuts on their own land in their own compounds. Mr. Sampson during his visit commented adversely on some of the coconuts plantations, the unsatisfactory conditions of which were due to position, soil and drainage. Greater attention will be paid to these points in future. He pointed out that coconuts grow best within sound of the human voice, and a comparison of palms growing within village compounds compared with palms in plantations well outside the villages strongly emphasized this point. Needless to say it is not the honeyed accents of the Mendi language that excites the coconuts palms to grow, but the refuse, etc., constantly thrown on to the ground in the vicinity of the native villages.

In some parts of the Southern Province coconuts were badly attacked by scale pest and it is obvious that the danger from this pest is not yet passed.

14. *Ginger*.—Ginger continues to be grown in the same old way, very little attention being paid to its cultivation. It is impossible to estimate with any degree of accuracy the area under ginger, but although it is in small plots the aggregate area must be fairly large as shown by the exports. Moreover, unless the price is sufficiently high, many of the farmers will not bother to harvest their crop, but will allow it to remain in the ground for another year in the hope of the price reviving. This does not improve the quality of the ginger.

15. *Piassava*.—The export of piassava suffered a temporary setback in 1929 owing to the product being brought under inspection for the first time. This was partly due to a misunderstanding on the part of the natives that they would be prosecuted if their piassava were not up to the standard, and partly to the fact that when inspection was introduced it did not work smoothly. Misunderstandings have now been largely cleared away, a more sympathetic understanding has been established with exports firms, and the inspection of piassava is now working much more smoothly. As a result the trade is beginning to increase again and there is ample evidence that the quality of the piassava has been greatly improved. There are still firms who would be willing to buy bad piassava at a low price if they were allowed to export it but there seems little value in encouraging the production of fibre of such poor quality that half of it may have to be destroyed on reaching Europe.

EXPERIMENTAL AND DEMONSTRATION STATIONS.

16. *Njala*.—The work of this station was carried on as in previous years and existing data was added to. Good work is being done especially on the oil-palms plots where the results obtained by Mr. F. C. Deighton, the Mycologist, are of very great interest. (See Appendix VI). The future of this station was discussed with Messrs. Stockdale and Sampson. Attention was drawn to the number of introductions and frequent failures of exotic plants and it was suggested that a more intensive study of local agricultural needs, crop varieties and conditions would be of great benefit to the country. This study will be incorporated in the future work of the station.

17. *Demonstration Farm, Makump.*—The Makump demonstration farm is in a very flourishing condition and Mr. Glanville is to be congratulated on the good work carried out.

18. *Demonstration Farm, Pujehun.*—The coffee plantations on this farm are very promising but the rotation experiments with annual crops could not be properly supervised and were a failure.

19. *Demonstration Farm, Zimi.*—In view of the bad reports on this station by the Provincial Superintendent of Agriculture it was closed down in September.

20. *Masanki Oil-palm Plantation.*—The main features of the work of this plantation are given in paragraph 9 and details are given in the report of the Manager which is attached as Appendix II.

21. *Newton Fruit Farm.*—Good work is being done at Newton. The chief fruits under cultivation are bananas and citrus. With respect to bananas the trials include investigations into the effects of various manures, mulching and spacing. Experimental plots have already been established and although it is very early to say anything with certainty, yet from the vegetative growth of the bananas it appears that both mulching and nitrogenous manuring are beneficial and probably necessary for the successful growth of the crop. The effects of other manures are not yet obvious and we shall have to wait some time before reliable yields are available.

The citrus work is only in the nursery stage but sufficient nursery stock has been raised for the proposed programme of root-stock, varietal and manurial trials.

The report of the manager is attached as Appendix III.

22. *Research.*—The work of the research officers has been carried on with undiminished vigour although the absence on leave of Messrs. Hargreaves, Doyne and Deighton during 1929 has naturally somewhat slowed up their work. Despite that, the arrangements made for the carrying on of their work during their absence has resulted in much useful information being accumulated as will be seen in the reports by the Entomologist, Chemist and Mycologist which are submitted as Appendices IV to VI respectively.

23. *Agricultural Instruction.*—It is with great regret that I record the transfer to Kenya of Mr. D. C. Edwards who until October, 1929 was in charge of the agricultural instructional work at Njala. Of the five apprentices in their third year three only were successful in their final examination but better progress was made in the group of second year apprentices. I attached Mr. Edwards' report as Appendix VII.

24. *Inspection of Produce.*—The report of the Inspector of Plants and Produce is attached as Appendix VIII. It shows that much good work has been steadily carried on and that the quality of Sierra Leone produce is steadily if slowly improving. Our kernels are now recognized as equal in quality to any on the coast and the piassava from the Mano-Salija Sulima area once regarded as inferior to Liberian fibre is now regarded as superior. Mr. G. Tuach has been in charge of this work since the introduction of inspection and great credit is due to him for the success that has attended our efforts.

25. *Rainfall.*—A summary of the rainfall for the various stations during the last ten years is given in Appendix IX.

26. In conclusion I must draw attention to the very loyal and wholehearted manner in which all officers of the department have worked together during the year, and despite the shortage of staff due to the seconding, retirement and transfer respectively of Messrs. Moss, Scotland and Edwards the work of the department has been effectively carried on, each officer uncomplainingly shouldering extra duties and responsibilities. It is perhaps invidious to single out any particular officer when all have worked so well, but I must express my appreciation for the great assistance received from Mr. J. W. D. Fisher both during the time he took charge of the department when I was absent in the Gold Coast, and for the great help he has been in the re-organization of the department consequent on His Excellency's recommendations based on Mr. Stockdale's report. It is already obvious that the re-organization has stimulated a greater interest among all officers in the work of the department, that contact between officers is much more easily established, that the work of the department, can be carried on more efficiently and last, but perhaps not least, more economically.

I have the honour to be,

Sir,

Your obedient servant,

F. J. MARTIN,
Acting Director of Agriculture.

APPENDIX I.

EXTRACTS FROM REPORTS BY PROVINCIAL SUPERINTENDENTS OF AGRICULTURE.

SOUTHERN PROVINCE (MR. J. W. D. FISHER).

8. *Cocoa*.—There has been a decrease in the amount of work done in connection with this crop. This is largely accounted for by the increased interest the natives are taking in coffee planting, at the expense of cocoa in most parts, and further by the cessation of all communal planting in the Province in August. Planting was done in only a few communal plantations and from the 25th "town" nurseries in Mano River District seedlings will be readily disposed of to private planters during the coming planting season.

Cocoa Fermentation.—The Government's central fermenting stations at Yoni and Zimi were not re-opened. In place of this it was decided to send instructors into the centres of greatest production. The Provincial Superintendent of Agriculture toured these areas before the season commenced explaining the scheme to the people and three Agricultural Assistants later commenced operations in Pujehun and Mano River Districts. The results were somewhat disappointing, the amount of raw cocoa handed in at centres to be fermented being about 23 cwts. in Mano River District and $7\frac{1}{2}$ cwts. in Pujehun District. At first the natives seemed very reluctant to hand over their produce to be fermented in a common lot but later they became less suspicious in most places and a continuance of this method to improve the standard of cocoa exported is advocated.

9. *Coffee*.—During the year very considerable progress has been made in planting this crop. As in the case of cocoa, model, town or communal planting has ceased but there is an ever increasing demand from farmers for both seed and seedlings. This is particularly the case in Mano River and Pujehun districts and to a considerable degree also in Sumbuya District. In the Shebar and Sherbro Judicial Districts where coffee is an entirely new crop to the people the whole of the planting has been done on the communal system. Nursery work was started in Sembehun District during the year. The following is a statement of the planting done by the department in the districts:—

District.	Chiefdom.	Number of Seedlings Transplanted in Farm.	Number of Nurseries made.	Variety.	Remarks.
Mano River	Koya . . .	3,896	22	<i>Liberica</i>	
	Tunkia . . .	2,750	15	"	
	Nomo . . .	973	6	"	
	Makpelli . . .	715	1	"	
Pujehun	Barri . . .	—	14	"	Distributed from Pujehun nursery.
	Perri . . .	—	9	"	
	Mano Sakrim . . .	—	5	"	
	Bonia Sakrim . . .	—	2	"	
	Pukumu Krim . . .	—	2	"	
	Kpaka . . .	700	3	"	
	Kabonde . . .	106	—	"	
	—	1,297	—	"	
Sumbuya	Bargbor . . .	2,082	—	<i>Robusta</i>	
	Bumpe . . .	2,268	—	"	
	Lubu . . .	500	—	"	
Shebar and Sherbro Judicial	Imperri . . .	3,309	14	"	Nurseries made in all except Krim Chiefdoms.
	Banta . . .	1,522	14	"	
	Mokelli . . .	1,404	9	"	
Sembehun	Mano Bagru . . .	—	1	"	
	Bagru . . .	—	5	"	
	Kagboro . . .	—	2	"	
	Bumpe . . .	—	2	"	

In Mano River and Pujehun districts there are many privately made nurseries and in addition to this, Government, at the end of the year, commenced to distribute seed to planters and to make a number of central nurseries for distribution of plants.

10. *Swamp Rice*.—Work on this crop was confined to survey of prospective rice-growing areas and to trials in and around Lake Mabesse in Pujehun District. These trials were brought to a conclusion early in the present year.

Under the first head, promising areas of inland swamp have been noted in the course of tours but the principal work was the survey of the grasslands of the Malen, Wanje and Bum Kittam rivers undertaken by the Provincial Superintendent of Agriculture in September. These grasslands cover a wide area which is inundated by the overflow of the rivers between the months of April and December each year. The depth of the flood varied from seven to fourteen feet over the whole area in a season of average flood and the conclusion to be arrived at from this is that the conditions, generally, are unsuitable for rice cultivation. The soil is reasonably fertile and its utilization for dry season farming is being investigated.

The variety trials at Lake Mabesse have proved inconclusive chiefly owing to the difficulty in supervising experimental work in such a remote place. It has been proved conclusively, however, that the lake itself, with the flood uncontrolled, is quite unsuitable for the cultivation of even the tallest growing varieties, such as the Indo-China variety, tried there.

Instruction in the planting of inland swamps was given at two new centres in the Barri and Gallinas Chiefdoms of Pujehun District. Successful crops were raised. There are indications of a growing interest in inland swamp planting in a number of places in the Province.

11. *Coconuts*.—Coconut planting was carried out on the lines in force since 1923. The seed nuts have been supplied equally by the owners of houses in the coconut growing chiefdoms. The seedlings are grown in common nurseries and planted in common town plantations. As in the case of the cocoa and coffee crops, a census of the trees in these town plantations is being undertaken in order to assist Political Officers in arriving at the ownership of the trees.

The following is a statement of the planting carried out during the year.

District.	Chiefdom.	Number of Seedlings Planted.	Number of Seed Nuts placed in Nurseries.
Shebar and Sherbro ...	Nongoba Bullom ...	4,691	4,596
	Cha ...	1,989	1,472
	Bendu ...	1,418	1,060
	Dema ...	1,397	2,028
	Sittia ...	2,928	960
Pujehun ...	Kpaka ...	1,094	2,029
	Mano Sakrim ...	1,107	1,706
	Boma Sakrim ...	391	398
	Pukumu Krim ...	547	654
Sumbuya ...	Kwako Krim ...	3,860	4,740
	Messi Krim ...	2,079	2,740
	Baiama Krim ...	1,979	2,707
Total ...		23,480	25,090

Twenty-five seedlings of a dwarf variety from the Straits Settlements were planted out in Messi Krim Chiefdom.

The coconut scale insect pest, (*aspidiotus destructor*) has been particularly severe in Nongoba Bullom and is on the increase now in the mainland Krim Chiefdoms.

Demonstrations in the preparation of copra were held in five centres.

12. *Oil-palm Five-acre Demonstration Plots*.—There are now two of these plots of wild oil-palms undergoing treatment. The plot at Gambia (Jong) was closed on account of the inadequacy of staff for supervision.

The plots at Pujehun and Sumbuya begin to present a good appearance. The young palms are growing vigorously and many have come into bearing. The vacant spaces in the Pujehun plot have been planted with seedlings.

Tugboi Oil-palm Plantation.—Seeds in the raised nursery beds have germinated in large numbers and the strongest of them together with seedlings in the ground beds have been planted out in baskets. Preparations are in progress for extending this plantation in 1930.

A small plantation of the Nigerian palms was made in Mokelli Chiefdom (Shebar and Sherbro Judicial District).

NORTHERN PROVINCE (MR. R. R. GLANVILLE).

11. *Cocoa*.—During the year further plantations and nurseries have been made. The greatest activity has been in the Bombali District. This is the fourth year of cocoa cultivation in the Northern Province. The people have been quite keen to grow this crop and have eagerly taken all available seed and seedlings. Some of the plantations made in 1926 bore small crops of pods this year but it will not be until 1930 that there will be any marketable quantity. I give a table to show the number and whereabouts of nurseries and plantations made in 1929 under the supervision of my staff:—

District.	Chiefdom.	Number of Plantations.	Number of Seedlings Planted.	Number of Nurseries.
Bombali	Tane	10	985	9
	Kolifa Powala	7	687	6
	Kolifa Mayawso	1	36	1
	Kolifa Mabang	12	2,595	5
	Bonkonlenken Poli	3	162	4
	Bonkonlenken Mayopo	5	611	5
	Kuniki Barina	6	532	3
	Kuniki Sanda	2	131	1
	Kuniki Fulawusu	3	245	2
	Malal Mara	8	595	—
	Malal Rotin	5	1,710	—
	Mapaki	2	276	—
	Yoni Mabanta	3	380	1
Port Loko	Yoni Mamila	5	1,701	5
	Koya	—	—	5
	Masimera	3	1,846	4
	Bake Loko	2	175	3
	Makama	1	782	—
	Marampa	—	—	1
Koinadugu	Romendi	—	—	1
	Simiria	4	439	3
	Kafe	5	278	1
	Nieni	3	320	3
	Totals	91	14,486	63

12. *Nigerian Oil-palm*.—Further plantations of Nigerian Oil-palm have been laid down during the past year. More and larger plots would have been made if seedlings had been available. Nursery work was not possible as I was unable to obtain seed from Njala. However I hope to be able to resume this in 1930.

I am glad to be able to report that nearly all of the fourteen plantations made in 1929 have made very good progress.

The following table gives particulars of the new plantations:—

District.	Chiefdom.	Number of Plantations.	Number of Palms.
Bombali	Mapaki	1	83
	Kolifa Mamunta	1	160
	Kolifa Mayawso	1	190
	Kolifa Mabang	4	394
	Malal Mara	4	348
	Bonkonlenken Poli	1	32
	Bonkonlenken Mayopo	2	97
	Kuniki Barina	1	86
	Yoni Mabanta	2	214
	Yoni Mamila	2	88
	Simiria	1	107
Koinadugu	Total	20	1,709

13. *Coffee*.—There is an increasing interest in this crop and during 1929 a number of new nurseries and a few new plantations were made.

NURSERIES.

District.			Chiefdoms.	Nurseries.	Variety.
Bombali	...	...	8	30	<i>Canephora</i>
do.	...	...	6	14	<i>Stenophylla</i>
do.	...	...	1	2	<i>Robusta</i>
Koinadugu	...	...	3	4	<i>Stenophylla</i>
Port Loko	...	...	6	15	<i>Robusta</i>
Karene	...	...	7	8	<i>Robusta</i>
Total			31	73	

PLANTATIONS.

District.			Chiefdoms.	Plantations.	Variety.
Bombali	...	...	2	3	<i>Stenophylla</i>
Koinadugu	...	...	1	1	<i>Stenophylla</i>
Total			3	4	

14. *Kola*.—The cultivation of this crop has been further encouraged in the Koinadugu District where the Agricultural Assistant made nurseries (each containing 200 kolanuts) for the Paramount chiefs of fourteen different chiefdoms. Gaps have been filled in the plantations made in 1927–1928 and in many cases extensions have been added.

15. *Coconuts*.—The cultivation of coconuts is being encouraged in suitable parts of the Port Loko District. In 1929, 376 seedlings were planted at Urika in the Loko Masama Chiefdom. A large nursery of 1,426 nuts has also been made at the same place and the plantation will be extended in 1930. Other plantations and nurseries were laid down as follows—

Benkia	...	One plot of 49 palms
Port Loko	...	Two plots containing 108 palms
Sanda	...	One nursery of 48 nuts
Port Loko	...	One nursery of 65 nuts

SWAMP RICE.

16. *Koinadugu District*.—The cultivation of swamp rice by the transplanting method has been further encouraged. In 1928 demonstration farms were made for the Paramount chiefs of the following chiefdoms:—

Sambaia, Kaling, Nieni, Wuli, Saradugu, Negeia, Morifundugu, Warawara Yagala, Simiria.

The yield from these farms was 2,400 bushels husk rice.

17. In 1929, Saradugu and Wuli did not make farms but four new chiefdoms, Dembelia, Musaia, Dembelia Sinkunia, Kabelia and Sulima, have taken up this work for the first year. These farms have not been harvested yet, but the majority of them have been reported as likely to give good yields.

18. *Karene District*.—The transplanting method has become so well established in this District that it was decided that it was unnecessary to continue demonstration farms.

19. *Bombali District*.—The same remarks reply as for the Karene District. Most of the persons who made farms under our supervision in previous years are now carrying on unaided.

20. The cultivation of sweet potatoes in the swamps, after the rice has been harvested, is being encouraged. It is more noticeable that more and more swamp land is being devoted to potatoes in the dry season. I have not yet carried out actual experiments to test the value of this rotation, but from observation, I have no hesitation in saying that the yield of rice is increased thereby.

21. *Indo-China Rice*.—In 1929, 10 cwts. of this rice was obtained from French Guinea and distributed in the Karene, Bombali, and Port Loko districts. This was done with the intention of testing the suitability of this variety for deeply flooded areas. The results are not all to hand as yet, but, from what information I have, it would appear that Indo-China rice can be used advantageously under certain conditions.

31. Further trials with this rice are advisable. It seems fairly evident that this variety will be useful for cultivation in deeply flooded lands but it is essential that flooding should be both steady and prolonged. Some of the grasslands at Batkanu, etc., where flooding is very severe but of short duration, are not suitable. This rice will grow quite well in the tidal areas but it is not recommended for cultivation there as it has no advantage over existing varieties. Sowing has proved more satisfactory than transplanting. Sowing should be finished by the end of May although early May is a more suitable time.

32. *Raffia*.—During the first quarter of 1929 this product was purchased by various firms at Magburaka and Makeni. Unfortunately the fibre was of very mixed quality. After March purchasing was suspended and no more fibre was bought during the year. It is proposed to lay down definite standards to which all raffia purchased must conform. It is understood that buying will probably start again in 1930. Some thirty bales of raffia, each of 200 lb., were baled at Makump by the department on behalf of local firms.

33. *Ploughing*.—During the year ploughing was fully tested at Karina in the Bombali District and at Batkanu and several other places in the Karene District. Some eighty acres were ploughed in all. Most of the land was used for swamp rice, but upland rice, fundi and cassava were also grown on ploughed areas.

34. In the Karene District six persons purchased 'L'Africa' ploughs and five of these were used. Only one owner failed, through no fault of his own, to take up the work. A Ransome plough, "The Victory," was also tested. Both types of plough proved satisfactory but the Ransome plough is a stronger and slightly more efficient implement.

35. Two makes of zig-zag harrow—one French, made by Plissonnier, and the other made by Ransome were tried. The French harrow was the better. It is heavier and levels the ground more efficiently.

36. The local oxen took readily to the work and were able to plough after a very short training.

37. I have no hesitation in saying that all the operations in connection with the actual ploughing succeeded even better than I had hoped for. Both ploughs and harrows were satisfactorily and no difficulty was experienced in training oxen and ploughmen for the work. Where good crops were not obtained on ploughed land, the faults could not be blamed on the cultural methods. Any failures were due to other factors.

38. Thirty "Victory" ploughs and thirty Plissonnier harrows have been purchased for sale to applicants who have sent in their names as anxious to take up this work in 1930. In addition to the ploughing centres at Karina and Batkanu, it is now proposed to send trained instructors and ploughmen to initiate ploughing in the Koinadugu and Port Loko Districts.

CENTRAL PROVINCE (MR. J. V. R. BROWN).

9. *Swamp Rice. 1928-1929 Crop*.—Swamp rice farms planted in the Timne method were made in Moyamba District in 1928 for the first time; this method of swamp rice cultivation was therefore demonstrated in all Districts of the Province last season.

The following table gives the average yield for each District during the last two seasons:—

District	Total Number of Bushels Sown.		Total Number of Bushels Harvested.		Average Yield per Bushel Sown.	
	1927-28.	1928-29.	1927-28.	1928-29.	1927-28.	1928-29.
Pendembu ...	101.0	145.5	4,856.5	7,701.0	48.1	52.9
Kono ...	11.15	30.15	347.0	1,629.0	31.1	54.01
Panguma ...	10.0	44.0	592.5	2,077.25	59.25	47.2
Kenema ...	10.5	25.0	377.52	876.85	35.95	35.1
Moyamba ...	—	8.0	—	184.65	—	23.08
Central Province	132.65	252.66	6,173.52	12,468.75	46.5	49.35

It will be seen that the yield for season 1928-1929 was 12,468.75 bushels—more than double the yield recorded for the previous season. It should be noted that the above figures refer only to farms cultivated under the supervision of Agricultural Assistants and rice planters.

1929-1930 Crop.—Harvesting work is in progress. A further extension of propaganda work took place in 1929, and the number of demonstration farms in each district except Pendembu, was increased.

It was decided that the people of Pendembu district had received sufficient instruction in this method of swamp rice cultivation and that they could be left to carry on the work themselves; the rice planters in this district were therefore transferred to other districts early in the year. The removal of the rice planters seems to have been justified as I understand from Paramount Chief Momo Banya of Luawa Chiefdom, Pendembu District, that his people made 3,100 swamp rice farms this season.

The following table shows the number of demonstration farms made by the Agricultural Assistants and rice planters in each district in 1929.

District.				Number of Farms.		Bushels Sown.	
				1928.	1929.	1928.	1929.
Pendembu	..	...	...	84	40	163	96
Kono	...	...	...	11	69	25	123
Panguma	...	...	...	29	73	50	152
Moyamba	...	...	...	7	48	8	66
Kenema	...	...	...	28	65	36	142
Central Province ...				159	295	282	579

10. *Cocoa.*—Cocoa planting was continued in Pendembu and Kenema districts.

The table below gives figures for the 1929 planting season:—

District				Number of Seedlings Planted.	Number of Seeds Sown.
Pendembu	...	...	...	11,703	12,872
Kenema	...	...	...	5,895	55,042
Total ...				17,598	67,914

11. *Coffee.*—Coffee planting was carried on, but the work this year was again limited on account of the shortage of *Stenophylla* Coffee seedlings.

Plantations were established in the Province as follows:—

District				Variety	Number of Plantations.	Total Number of Trees.
Pendembu	...	...	...	<i>Stenophylla</i>	8	1,131
"	...	...	...	<i>Canephora</i>	1	100
Kenema	...	...	...	<i>Stenophylla</i>	7	1,420
Kono	...	...	...	"	1	50
Panguma	...	...	...	"	6	410
Moyamba	...	...	...	<i>Canephora</i>	75	17,598
				Total ...	98	20,709

The native appears to be keen on growing coffee and this year the supply of seedlings was not sufficient to meet the demand.

The seedlings planted out this year are reported to be doing well.

APPENDIX II.

MASANKI PALM PLANTATION.

ANNUAL PROGRESS REPORT FOR 1929.

It was realized at the beginning of the year that, owing to the disappointing percentage of germination in 1928, there was little chance of appreciably extending the planted areas in the field and that the work of the year would be limited to raising in the nurseries an adequate number of seedlings to meet requirements for planting in 1930, maintaining the existing planted areas, (including beating up of failures), planting up of small fresh areas as supply of seedlings permitted, pushing forward the work on buildings and extending the system of roads.

There are now over 100,000 palm seedlings lined out in the nurseries. As the requirements for 1930 planting amount to about 60,000, there is not only an adequate margin for failures but selection can be made and only the most robust seedlings need be removed to the field.

The 350 acres in Block I and the fifty acres in Block II, all planted previously, have been maintained. But it was unforeseen that a plague of rats would increasingly attack the palms. Drastic counter steps had to be taken which entailed an expenditure of well over £600 which had not been anticipated. 13,600 seedlings were used for beating up failures, thus using up stock with which it had been intended to plant new areas.

The only fresh area tackled was thirty acres in Block III which was planted with palm seedlings of the Deli type.

The labourers' lines have been extended to house 180 regular labourers in all and the total of other buildings now meets present requirements.

Owing to the increased expenditure on maintenance of planted areas as a result of the rat plague, no work other than maintenance was done on roads.

CULTURAL.

(a) *Nurseries*.—About 582,000 Nigerian "A" type seeds and 210,000 Nigerian "B" type seeds have been received from the Experimental Farm at Njala. About 130,000 Henoi type seeds were received from Baiima. With the Henoi, germination is very slow, but there are now over 20,000 young seedlings lined out which should be more than sufficient for completing the planting of, and beating up failures in, Block I. Germination of the Nigerian types has been quite good, as much as 46 per cent. being obtained in some cases.

There are now 34,000 "A" type and 50,000 "B" type now lined out. There are about twenty-five acres of nurseries round the office. The brushing, clearing, stumping and making of beds over this area entailed considerable expense; the seedlings lined out vary in age up to eleven months. All seedlings are lined out two foot by two foot so that they may easily be lifted for removal to field with a large cube of earth to avoid root disturbance. Roads have been made through the nurseries to facilitate the removal of palm to the field by lorry.

(b) *Field*.—The chief work has been to put a stop to the depredation by rats. Poison bait was left untouched and the rats had to be tackled in their warrens. Planted areas were cutlassed in the usual way in March and April, for less than four shillings an acre. But these brushing together with previous brushing, especially in Block I, where the original brushing had never been burnt off, provided excellent shelter for rats and concealed many of their holes, so that when one hole of a warren was exposed and tackled, the rats had every chance of escaping by a concealed hole.

In the first effort to expose as many holes of each warren as possible, all brushing were collected into heaps during April and May at a cost of over £90. But the rats still found shelter in these heaps. In June and July therefore, large pits at the rate of two per acre were dug, the whole area recutlassed clean to the ground, these brushing and the heaps of previous brushings being placed in the holes; this process cost £300. At first some gangs were put to work on digging out rats from their warrens and afterwards a bonus of penny per rat was given so that labourers might be encouraged to catch rats in their spare time: in this work over £63 was spent.

It has been found that the most successful way of dealing with a rat plague is the use of cyanogas "A" dust but it is necessary that the area being treated must be quite clean. There is a definite record of £23 being spent on the work of gassing, but much more was actually spent as labour would be engaged when weather, etc., permitted, perhaps only for an hour or two at a time and it was necessary to give a general allocation of such labour seeing that during the other hours of the day they were employed on various other work. Many, many hours of the writer's time was taken up in supervising the gassing operations, till the Entomologist visited the plantation in the first week of August to concentrate on the rat question and permitted the poisonous gas to be used without European supervision. Trouble from rats eventually ceased towards the end of September.

Twelve thousand seedlings of Henoi variety were taken from the old nurseries to the field and used for beating up failures in Block I, plots 1-9. 1,600 Nigerian "A" seedlings were moved from the old nurseries and taken to the field to beat up failures in Block II, plots 5 and 7. In June, over 1,600 Deli seedlings were planted in plot 13 of Block III, an area of about thirty acres; this being the only new area tackled in 1929. This was treated experimentally, ten acres being planted at 26' spacing, ten acres at 28' and ten acres at 30' spacing.

Considerable areas of lalang grass have been dug up, hand picked and sown with *Calopogonium*. The cost of seed came to about £58 and the labour to about £210. The plot of Canary Bananas looks well, and a commencement has been made at reaping fruit. 3,000 banana suckers were supplied to Newton Experimental Fruit Farm in August. About £20 was spent in demolishing the various termite hills throughout the planted areas.

Water Supply.—The work of digging a well, erecting two 7,000 galltanks, installing pumping plant and laying of connecting pipe line to stand pipes in the nurseries, has been undertaken by the Public Health Engineer, who controlled sub-head 7 for £500, an additional £760 provided by savings on other sub-heads, and a Special Warrant. Work started on the 1st February. At the end of the year the pump was working and water could be obtained at the various stand pipes in the nurseries, but the system has not yet been handed over to the Plantation Management.

Telephone.—Work on this was commenced in December last year, Communications between the four points, (a) Plantation Office, (b) Mabang Station, (c) Masanki Siding and (d) Manager's Bungalow, were established in February. Owing to the age of the instruments, considerable amount of attention has been necessary though the line is now giving no trouble. The installation has proved very useful for the transmission of telegrams, and communications relative to the siding. When off duty and at the bungalow, the officer in charge can immediately be got in touch with. This is most useful now that there is a possibility of there being no European officer resident at or near Masanki.

Foodstuff Supply.—Consent for the erection of a suitable canteen-store with accommodation for the resident Trader was eventually received and the building erected. The trader entered into possession in the middle of July leaving the temporary canteen available for Carpenter's Shop and Dispensary.

Staff.—An officer of the Forestry Department was in charge up to the end of January, when the Assistant Manager (the writer), relieved him. The writer remained in charge till the 19th September when he left for an early leave of nine weeks. He was relieved by Mr. McIntosh, who was in charge from the 19th September, 1929, till the later went on leave being relieved by Captain Fisher on the 12th December, the last named being in charge over the end of the year. With the exception of the writer, none of the above mentioned officers were paid their salary from the plantation vote. A duty allowance was granted to the officer in charge of the plantation as from the 1st July. Throughout the year a European overseer assisted in control of labour on the plantation. He gave special attention to buildings, the erection of which he was in charge. A second class Ranger of the Forestry Department acted as overseer up to the end of August. For a short period there was a vacancy for this post. An officer was then appointed to fill the position of African overseer, but his services were not satisfactory and the post is again vacant.

Visits.—Among those who visited the station His Excellency the Governor, accompanied by Mr. F. A. Stockdale, the Agricultural Adviser to the Secretary of State, and the Acting Director of Agriculture, visited the plantation on the 18th November and His Excellency the Acting Governor accompanied by the Director of Agriculture, inspected the plantation on the 11th June.

I. G. C. SQUIRE,
Agricultural Manager.

APPENDIX III.

ANNUAL REPORT OF THE EXPERIMENTAL FRUIT FARM,
NEWTON—1929.

Staff.—Mr. M. Vardy, Manager, arrived in the Colony on the 25th January and assumed duty at Newton on the 5th February.

Mr. J. Eaden, Assistant Manager, arrived in the Colony on the 19th April and assumed duty at Newton on the 22nd.

2.—BUILDINGS.

Manager's House.—The Managers's house, built by the Public Works Department, last year, was completed in June this year, when concrete drains were put in and the damage to the walls caused by the shrinking of the mud blocks made good.

Assistant Manager's House.—The Assistant Manager's house, built by Mr. MacDonald of the Forestry Department, was completed in February. Both houses have been supplied with kitchen stoves and baths and furnished throughout by the Public Works Department.

Office and Stores.—The foundations of the office and general stores were laid in December, 1928, but no building was done until February this year as it was necessary to complete the Assistant Manager's house first. The building was completed and taken over as an office, etc., on the 16th April. The temporary office, a galvanized iron building, is now used as a garage for the motor lorry. The building of the petrol store was started in April and completed in May.

3.—WATER SUPPLY.

The Public Works Department commenced operations on the water supply in the middle of March. By the end of September the two houses, part of the nursery, and the plot for bananas under irrigation had been supplied with water, but by this time the vote of £1,175 was exhausted and the work ceased. The vote was held by the Public Works Department and that department was responsible for supervision and all operations in connection with the scheme. A storage tank of 7,000 gallons capacity was erected in August.

4.—CITRUS NURSERY.

Before taking up residence at Newton, the Manager visited the farm twice and inspected the place, and selected a site for the Citrus Nursery. With Dr. Martin he drew up a scheme of work, and plans were made of the proposed layout of the plots earmarked for manurial, rootstocked and variety trials on grapefruit, and manurial, distance of planting and mulching trials on bananas.

Seed sown.—Sowings were made of sour orange, sweet orange, tangerine orange, and rough and sweet lemon during the months of February, March and April.

Origin of seed.—The seed for these sowings came from the following districts:—

Seville orange	}	Njala Experimental Station.
Tangerine orange		
Rough lemon		
Sweet orange	}	Waterloo.
Sour orange		
Rough lemon	}	Songo.
Sweet lemon		
Shaddock		Gbangbama.

On the whole the germination was good but it is evident that the soil at Newton is in a very poor condition, owing to repeated native cultivation without any attempt being made to manure the soil. During the month of July the strongest plants of the seedlings rootstock were transplanted from the seed beds to specially prepared nursery beds, or drifts. Almost immediately after transplanting the heavy rains commenced and there was little or no growth with these plants until October. Since then they have made good progress and are growing vigorously. Some will be ready for budding about March.

5.—PESTS.

Two species of burrowing crickets, *Brachytrypes membranaceus* and a small black one which has not yet been identified, have been the most serious pests we have had to contend with so far. *Brachytrypes membranaceus* was the most troublesome early in July, just after the seedlings had been transplanted, but the damage done by this species was nothing compared with the damage done by the smaller one during August and September.

Mr. Hargreaves, the Entomologist, visited the farm in July, August and September for the purpose of dealing with these pests, and brought with him calcium arsenate and other arsenical compounds. Two types of dusting machines for applying these powders were tried, the rotary type being the more effective distributor. The effectiveness of these dusting and spraying operations with arsenical compounds was lost through the heavy rains washing off the powders and sprays soon after application. Digging the crickets out of their burrows was the only practical way of dealing with them and during the months of September, October and November over 10,000 were caught in and about the nursery in this way.

6.—BUD WOOD.

Bud Wood Supply—Njala Experimental Station.—The manager visited the Experimental Station at Njala from the 6th to the 9th, for the purpose of seeing the grapefruit trees from which bud wood for Newton is to be supplied. At the time this visit was made, the thirteen-year-old trees in the old fruit arboretum were not in a particular vigorous state of growth. Overshading by the large Mango trees on the adjacent plot would account for this to a large extent. Secondly, fruit trees of this age on any soil would benefit by a dressing of fertilisers occasionally. A little manure would assist these trees greatly. None of the young trees in the new Citrus Plot have yet begun bearing. Trees 11, 12, 13, 14, 15 and 16 in the old plot are bearing, but there was no fruit ready at the time of this visit. The particularly good marsh tree No. 16, commented on as “*excellent*” by Professor Clark Powell, had only one fruit, and this not ripe, so that except for seeing the trees there was really very little on which to judge their merits.

7.—BANANA EXPERIMENTS.

Thirty-three and one quarter acres of land have been cleared, stumped and planted with Canary Island bananas. The following experiments are being conducted over this area:—

- Manurial trials
- Mulching trials
- Spacing trials
- Irrigation trials.

Manurial trials.—Plots 1 and 2, manurial trials, were given the first dressing of fertilizer the first week in July and the second dressing during the last week in September.

Plot 1 which is designed to show the individual effects of nitrogen, phosphorous and potash is divided into twenty-five one-eighth-acre sub-plots, each containing fifty-five plants; each plant being labelled with an individual number and the number of the sub-plot.

Plot 2 which is designed to show the effects of different kinds of nitrogenous manures contains thirty-five sub-plots of one-eighth acre, each containing fifty-five plants labelled as in plot 1.

Plot 3. (Mulching experiment) is divided into twenty one-eighth acre sub-plots containing fifty-five plants each. Light and heavy grass mulches are being used. Sub-plots 3, 7, 11, 15 and 19 are lightly mulched,—2, 6, 10, 14 and 18 heavily mulched,—1, 4, 5, 8, 9, 12, 13, 16, 17 and 20 are controls. Heavy mulch at the rate of 30 tons to the acre and light mulch at the rate of 15 tons was put down in August. At the time of writing, the effect of these mulches is marked, particularly so in the case of the heavy (30 tons to the acre).

Plot 4. (Spacing or distance trials).—A plot of nine acres south of plots 1, 2 and 3, was divided into half acre sub-plots which are planted with bananas spaced at different distances. The bananas were planted in September. The sub-plots have been hoed through twice and mulched with stacked material. No fertilizers have yet been applied but it is proposed to give these and the irrigated plot a dressing of a general manure with the first rains.

Plot 5. (Irrigation experiment).—A plot of two acres was planted with bananas in September for irrigation trials,—half the plot will be irrigated and the other half will be used as a control with suitable guard rows between. It is proposed to irrigate in January, February, March and April;—up to the time of writing the plot has been hoed and mulched only.

Grass Mulch for all plots.—During the month of September and October over 800 tons (wet weight) of fresh grass was cut and stacked in the "banana area." This material was put down as mulch in December on plots 1, 2, 4, 5, and the guard rows at the rate of 13 tons to the acre.

Guard Rows.—Four rows of bananas have been planted around the whole area, and between plots 1, 2, 3 and 4 to eliminate marginal effect as much as possible in the plots.

8.—COVER CROPS.

The following legumes have been planted with a view to ascertaining which is the most suitable cover crop for this soil, and the best for keeping down lalang grass:—

Calopogonium muconoides
Tephrosia candida
Tephrosia noctiphora
Crotolaria sp:
Cajanus Indicus
Mucuna sp:
Arachis hypogea.

9.—McCARTY GRAPEFRUIT TREES FROM FLORIDA.

Thirty-five trees were received at Newton on the 19th July from the Glen St. Mary Nurseries Company, Florida. The trees arrived in good condition, the roots having been well packed in sphagnum moss.

They were planted in plot 3 on the 20th July, on the north side of the Manager's house. Most of the trees started new growth within ten days of planting and continued to make good progress up to the middle of August. They were then treated with carbon bi-sulphide against white ants. About this time it was noticed that many of the shoots had withered at the tip and undeveloped leaves were falling off, while on older leaves dark brown blotches appeared which later developed into a sooty mould. For a week or two this continued and many of the young shoots blackened and died off. The trees were twice sprayed with Bordeaux mixture and the old wounds caused in transit and the ends of shortened branches trimmed, and treated with Bordeaux paint.

Twenty-six of the thirty-five trees are making satisfactory growth, three have died back to the rootstock and six have died outright and have been removed.

10.—AVOCADO PEAR TRIALS.

When the scheme of work was drawn up, two one-fifth acres of plot 3a immediately behind the Manager's house were earmarked for Avocado pear trials. One-half to be planted with good native seedlings and the other half with known varieties from countries where the Avocado pear is commercially cultivated.

Regarding the native seedling section, twelve seedlings from the Njala Experimental Station were planted on the 15th July; twenty-four seedlings from our nursery (the seed from a good tree at Heddle's Farm, Freetown), were planted on the 5th August; twelve seeds from a good tree in Newton were planted at stake on the 13th August. Seven of these have germinated and are making good progress. Forty-four well grown seedlings in wicker baskets were received from the Njala Experimental Station on the 16th November and the planting completed on the 18th. The young trees are planted on the square system—sixty-nine trees to the acre.

With regard to named varieties, no planting in this section has yet been done. When replying to a questionnaire from the Bureau of Fruit Production in August, the Bureau was asked if it could assist us in obtaining good varieties of Avocado pears from regions unaffected by serious pests or disease. Up to now no reply has been received.

11.—VISITORS.

Visitors to the farm during the year under review, include His Excellency the Governor, the Honourable the Colonial Secretary, the Director of Agriculture, the Acting Director of Agriculture, Mr. Stockdale, Agricultural Adviser to the Colonial Office, Mr. Sampson of the Royal Gardens, Kew, Mr. Pirie, Acting Director of Agriculture, Gambia, Mr. Bache Wiig of Santa Cruz, Teneriffe, Mr. Hargreaves, Entomologist, Mr. Fisher, Provincial Superintendent of Agriculture, Southern Province, Mr. Lyon, District Commissioner, Waterloo, and the Manager and Acting Manager, Masanki Palm Plantation.

12.—RAINFALL.

A rain gauge was received in May and the rainfall recorded as follows:—

						Number of Wet Days.	Inches.
May	...	...	...	...	...	12	8.40
June	...	...	...	...	...	23	24.22
July	...	...	...	...	...	27	27.13
August	...	...	...	...	...	26	29.93
September	...	...	...	...	...	25	26.30
October	...	...	...	...	...	24	12.54
November	...	...	...	...	...	10	5.24
December	...	...	...	...	...	1	.24
						148	134.00

In conclusion I wish to thank Mr. Eaden for his loyal support and assistance, particularly in the training of headmen to understand task work and the setting of tasks to labourers, so that the work can be checked and the cost of farm operations estimated beforehand. I also have to thank Dr. F. J. Martin and Mr. E. MacDonald for their assistance when I arrived in the Colony and Mr. E. Hargreaves for his aid in the campaign against crickets.

M. VARDY,

Manager, Experimental Fruit Farm.

25th January, 1930.

APPENDIX IV.

ANNUAL REPORT OF THE ENTOMOLOGICAL SECTION
FOR THE YEAR 1929.

The Entomologist was away from the station for half the year, which included vacation leave, attendance at the West African Agricultural Conference in the Gold Coast, and various treks.

2. *Citrus*.—Much damage was occasioned to the nurseries at Newton by crickets the main species being *Gryllus lucens*, Wlk., and owing to the frequent rains the application of poison bait was of no value. The difficulty was ultimately overcome by digging them out each morning, the positions of burrows being indicated by small mounds of earth. Defoliators, such as *Papilio demodocus*, Esp., were dealt with by spraying the seedlings with lead arsenate.

3. It may be mentioned that cricket damage is prevalent almost invariably on newly opened ground.

4. *Brachytrypes membranaceus*, Dru., also contributed to the damage at Newton, At Njala where this pest was also encountered spraying with Bordeaux-lead arsenate mixture was carried out.

5. *Cocoa and Coffee*.—At various places, trouble was experienced in the case of young plants of these two crops due to attack of the main stem of borers (*Xyleborus compactus*, Eich.), while larger coffee plants were affected by the cossid, *Xyleutes armstrongi* Hmps.

6. Lead arsenate and lime, used as a paint and applied to the stems, prevented further damage.

7. *Ginger*.—In connection with attack by the scale, (*Aspidiotus hartii*, Ckll.), comparison of clean and infested material stored under identical conditions was made; storage extended over a period of 175 days, and the loss in weight due to scale attack was 22.5 per cent.

8. A similar comparison made two years ago showed a loss of 14 per cent. in 128 days.

9. *Kola*.—The pruning of trees in plot 4 and in the store compound was carried out, but records are not available owing to pilfering of nuts.

10. Fumigation of nuts, using calcium cyanide at the rate of 4 ozs. per 100 cubic feet of space caused discolouration after exposure for twenty-two hours. Further trials will be made.

11. *Oil-palm*.—At Masanki. Very numerous palms were killed by rats, which consumed the growing point, and the treatment ultimately evolved was to locate the openings to the burrows then blow in by means of a dusting machine Cyanogas "A" dust. The Cyanogas "G" granules were found unsuitable for the conditions.

12. Progressive work has greatly decreased damage, and it should be continued until the palms are too large to be affected by the rats.

13. Caterpillars and crickets (*Gryllus lucens*, Wlk. and *Brachytrypes membranaceus*, Dru.) were becoming serious in the nurseries, but the former were quickly subdued by treatment with an arsenical.

14. On the palm plantation at Njala, much of the fruit is attacked by scale insects and mealy bug, and the following identifications of these have been received:—

Diaspis lutea, Newst.
Aspidiotus lataniae, Sign.
Pinnaspis aspidistræ, Sign.
Chrysomphalus rossi, Mask.
Leucaspis cockerelli, de Charm.
Phenacaspis sp.
Pseudococcus brevipes, Ckll.

15. Infestation has increased during the past few years, and it is considered that they have a serious effect upon quality of pericarp oil.

16. Palm fruit heads are difficult to treat, but it was thought that Cyanogas "A" dust (Calcium cyanide) applied by a duster might deal with them, the slowly generated hydrocyanic acid gas penetrating between the separate fruits.

17. Another aspects of these insects is, that a large amount of earth is collected by the ants which tend them, to form coverings as protection from other insects and the weather.

18. Harvest records would indicate that the dusting has had some result as, during the year, seven of the treated palms yielded forty-seven fruit heads (one palm did not fruit), and out of these only four were infested with scale insects and mealy bug, or about 8.5 per cent.

19. The average infestation for the whole plantation was about 20 per cent.

20. *Termites*.—Experiments were continued, and as Paris green, and lead arsenate, were previously found so effective in treatment of trees, timber structures of houses, and articles on floors attacked by termites, an effort was made to extend the use of an arsenical compound to treatment of termite mounds. A conclusive statement cannot as yet be made, and further work is to be done.

21. *Locusts (Migratory)*.—A swarm of these locusts was first reported in the middle of April, during my absence on leave, and my Laboratory Assistant proceeded to investigate, a separate report being submitted by him. Various swarms were later reported up to the end of June, when the rains set in.

22. In July, a questionnaire was sent to Political and Agricultural Officers, in an effort to collect all available information upon the subject.

23. The locusts re-invaded this country early in December. Very little damage has been done, and a full report is to be prepared.

24. *Zonocerus Variegatus*, L.—Daily collection was continued, records being kept. Eggs were dug up from the breeding places, and the effects of this were very noticeable towards the end of the year when hatching normally occurs.

25. Some hatching occurred in Kania (Njala) during April and May, and poison bait was applied. It has been found practicable to reduce the quantities of Paris green and salt respectively by half, so that the present formula is:—

Sawdust	...	1 bushel (or 20 lb.)
Paris green	...	$\frac{1}{2}$ lb.
Salt	...	1 lb.
Water	...	5 quarts

26. The normal hatching season commenced on the 23rd September, and only nine bushels of poison bait was necessary to the end of the year.

27. Work against this pest has been extended to include the new agricultural building and residential area.

28. *Agricultural Apprentices*.—These were instructed in preparation of insecticides, and given practical experience in application, including dry powders, liquids, and poison bait.

29. *West African Agricultural Conference*.—The Entomologist was a delegate at this Conference, which was held in the Gold Coast during the latter half of October.

30. *Collections*.—Many specimens were collected, and the identifications included about sixteen species new to science and thirty new to the British Museum.

31. *Acknowledgments*.—Our grateful thanks are due to the Imperial Bureaux of Entomology and Mycology and to the Trustees of the British Museum for the ever ready and valuable assistance rendered by their directors and staff.

E. HARGREAVES,
Entomologist.

AGRICULTURAL DEPARTMENT,
Njala via Mano,
28th February, 1930.

APPENDIX V.

ANNUAL REPORT OF THE AGRICULTURAL CHEMIST FOR THE YEAR 1929.

I have the honour to submit herewith my report for the year 1929.

2. The Agricultural Chemist was appointed Acting Director of Agriculture on the 11th of August. The Assistant Agricultural Chemist proceeded to England for vacation leave on 12th April and resumed duty on 20th September. Immediately after his return the chemical laboratory in Freetown was dismantled and sent up to Njala. Packing operations occupied nearly three weeks and were undertaken personally by the Assistant Agricultural Chemist. On unpacking at Njala the breakages were found to be negligible. The laboratory at Njala was not ready for any work to be done during 1929 and consequently the year's work was confined to the early months.

3. The Agricultural Chemist represented Sierra Leone as Acting Director of Agriculture at the West African Agricultural Conference at Accra in October.

4. The following samples were received:—

Soils :

Southern Province	...	...	3
Central Province	...	...	11
Nigeria (Cameroons)	...	...	3
Gambia	...	...	7
			— 24

Oil-palm Products :

Palm fruits from Cameroons	...	1
„ „ Southern Province	...	2
„ „ Central Province	...	1
Palm oil from Central Province	...	1
		— 5

Miscellaneous :

Engine oil	...	...	1
Chromite	...	...	1
Clay for brickmaking	...	...	1
Fertiliser (rice cleanings)	...	...	1
			— 4

33

5. *Soils*.—During the past year twenty-four soils were received, the results of analysis of which can be summarized as follows:—

Three soils from the Cameroons (two from Ndian and one from Aba). The Ndian soils were stony and contained very little fine material (clay and silt). The Aba soil was similar except in so far as it contained no stones. The fine material in each of these soils amounted to approximately 10 per cent., which is less than usually found in Sierra Leone soils. The organic matter content was rather lower and the acidity appreciably lower than that which is customary in the soils of this country.

Seven soils were received from the Gambia through the kindness of the Director of Agriculture there. The analysis of these is not yet complete but so far the results show soils which are little more than sands, containing about 90 per cent. of coarse material and very low figures for organic matter content. They certainly contain more fine material and organic matter than the extremely sandy soils which occur along the coast between Pujehun and Mano Salija, but in other respects appear to be appreciably less fertile than the majority of soils in Sierra Leone.

Eleven soils were received from Njala for the determination of organic matter. The soils were taken from land which had been for two seasons under cultivation and the results were compared with similar samples taken from the same area before cultivation started. The results were inconclusive and it is hoped that other experiments will be carried out under more strict control.

Three soils from Pujehun together with a sample of clay were received for the purpose of determining the value of the clay for brickmaking purposes. The clay appeared to be suitable for this purpose in so far as a chemical and mechanical analyses can give an indication of this. The surrounding soils appeared to be of the same character as the clay itself.

6. *Oil-palm Products*.—Analyses were carried out on palm fruits and palm oil received from Masanki and Njala. The palm oil was received in connection with a trial of the Voms palm oil expressing plant which was undertaken by the Agricultural Instructor. The oil from this source proved to be of very good quality containing only 4·8 per cent. of Free Fatty Acid and 0·2 per cent. of Water.

7. *Miscellaneous samples*.—The viscosity and flash point of a sample of Engine oil was determined.

A sample of chromite was analysed for the Director of Geological Surveys which contained 40·5 per cent. of chromic oxide. This figure is similar to those obtained from chromite deposits in other parts of the world.

8. *Fertilizer and fertilizer trials*.—A sample of rice “cleanings” was analysed to determine its value as a fertilizer.

The following results were obtained:—

Moisture	...	...	8·98%
Nitrogen	...	...	1·71%
Phosphorus as P_2O_5	...	...	4·50% equivalent to 9·1% tricalcium phosphate
Potash as K_2O	...	...	0·29%

On this basis the commercial value of the manure in England would be about £2 5s. 0d. per ton.

The Agricultural Chemist co-operated with the Manager of the Fruit Farm, Newton, in the planning of manurial trials for grape fruit and bananas. The banana plots were laid out in the early rains and the manures applied. Although no yields are yet available it is very obvious that certain manures are given some form of nitrogenous manuring is highly desirable with our soils for the proper cultivation of the banana crop.

9. Officers of the Chemical section collaborated in the preparation of the following papers which were:—

I. Read at the West African Agricultural Conference, Accra, in October:—

- “Possibilities of fruit Export Industry in Sierra Leone” by D. W. Scotland and F. J. Martin.
- “The Inspection of Produce in Sierra Leone” by F. J. Martin and G. Tuach
- “Notes on Oil-palm Investigations in Sierra Leone” by D. W. Scotland and F. J. Martin.

(d) "Notes on West African Soils" by F. J. Martin and H. C. Doyne.

(e) "Need for further Research Facilities in West Africa" by F. J. Martin.

II. Read at the Imperial Meteorological Conference, London.

"Climate, Crops and soils in British Tropical Colonies" by F. J. Martin.

III. Published in various periodicals:—

(a) "Extraction of Palm Oil" by F. J. Martin in *Tropical Agriculture*.

(b) "Laterite and lateritic soils in Sierra Leone II" by F. J. Martin and H. C. Doyne in *Journal of Agricultural Science* (accepted but not yet published).

10. Since all the papers read at Conference have been or will be published in the proceedings of the various Conferences, it is unnecessary to give further descriptions of them in this report.

11. The new laboratory at Njala is practically completed. It is spacious and airy and admirably suited for our work. Its situation adjacent to the Colony's main experimental station will enable the chemist to collaborate more closely with the agricultural officers on the farm.

H. C. DOYNE,
Acting Agricultural Chemist.

21st February, 1930.

APPENDIX VI.

ANNUAL REPORT OF THE MYCOLOGICAL SECTION

FOR THE YEAR 1929.

The Mycologist was on leave in 1929 from 19th May till 18th October, and while on leave attended, as the Sierra Leone delegate, the Imperial Mycological Conference held in London, in September.

2. In April, a trek was made in the Southern Province through some of the cacao-growing areas in the Pujehun and Sumbuya districts. A visit was also paid to Makump, Northern Province, early in May.

3. The Imperial Bureau of Mycology have, as before, been very helpful with advice, and thanks are also due to the staff of the Herbarium, Royal Botanic Gardens, Kew, for the identification of a number of specimens of flowering plants.

(a) *Mycological Investigations.*

4. The parasites are arranged under their respective host plants:—

BANANA.

5. A collapse of the pseudostem is very common in the dry season, and appears to be caused by drought. The pseudostem collapses at about the middle of its length, especially when fruiting, and the upper part hangs down. The older leaves may collapse first at the base, but do not always turn yellow, though a greyish blotching, especially at the edge of leaves, may be evident. The leaf bases on the outside of the pseudostem are always very dry and papery. If the upper part of the banana plant is supported, some inferior fruit may ripen, but often the fruit remains undeveloped and finally shrivels.

CACAO AND KOLA.

6. *Thread blights.*—The cacao and kola trees were very thoroughly examined in the villages passed through during the trek made in the Pujehun and Sumbuya districts of the Southern Province this year, and also round Makump, Northern Province, and in almost every village white thread blight was found both on cocoa and on kola. In several places horse-hair blight, which had not previously been seen in Sierra Leone, was found on kola or on cacao or both.

7. Kola trees are planted in every village and are in most cases badly infested with white thread and horse-hair blight besides being covered with epiphytes. As in many places cocoa plantations have been made in the shade of such diseased kola trees, it is not surprising that the cacao soon becomes attacked also. The obvious remedy is drastic pruning or felling, in bad cases, of the diseased kola, but this must be approached with caution in Sierra Leone, as the kola tree is planted as a memorial and has sentimental or religious significance. Further more, the kola often belongs to a different owner from the cacao.

8. In the bush, white thread was found, on *Euntumia Africana* and horse-hair blight on *Leptoderris fasciculata*.

9. *Fomes Lignosus*.—One or two cases of root disease of kola were seen this year, with fructifications of a *Fomes* developing from the trunk at ground level. In other cases of root disease of kola and young cacao, fomes was suspected as the cause.

10. *Collar Crack*.—Several rather old cacao trees growing in a low-lying plantation near the river at Makump, Northern Province, showed collar crack very badly. The leaves had fallen from the extremities of the branches, and marked die-back had occurred. The longitudinal cracks extended from near the ground to 5 feet up the trunk, and all the symptoms were quite typical of collar crack as described from the Gold Coast except that the frilly out-growths of the xylostroma from the cracks was not observed. No fructifications were seen, but the causal fungus may be presumed to be *Armillaria*.

11. A young guava growing near the cacao trees showing collar crack was also diseased. In this case there were no symptom of collar crack, but from the appearance of the affected roots, which was very similar to that of the diseased cacao roots, with plates of xylostroma in the outer tissues, the causal fungus of the root disease of the guava was assumed to be *Armillaria* also and some old guava stumps in the vicinity were considered to be the centre from which infection had probably spread.

12. *Pink Disease*.—No further reports of pink disease have been made, and it is hoped that it has been kept in check in the areas from which it was reported in 1928.

CITRUS.

13. *Scab*.—This was again serious about August—October on the leaves of the young-grape fruit at Njala. As in 1928, it was found that the scabbling was not very bad on the leaves at the beginning of the rainy season (May).

14. *Gummosis*.—This was found on one or two native grown sweet orange trees in villages. The roots of such native-grown trees are normally exposed owing to the heavy rain having washed away the soil round about them, and this may account for the rarity of the disease on sweet orange trees in native villages.

TOMATO.

15. *Blossom-end Rot*.—Specimens of tomatoes affected with blossom-end rot were received from Hill Station and Cline Town. This is a physiological disease, although fungi and bacteria may enter later. Possibly some change in the method of watering of tomatoes would help to decrease the incidence of the disease, and one watering in the early morning has been suggested.

YAMS.

16. *Bagnisiopsis dioscoreæ* was again common at Njala on cultivated and wild yams in 1929.

(b) Herbarium.

17. About 300 specimens of flowering plants were collected in Sierra Leone during the year and added to the departmental herbarium. A number of the specimens were collected by Mr. R. R. Glanville in the Northern Province. Duplicates of these specimens have been sent to the Royal Botanic Gardens, Kew.

(c) Oil-palm Investigations.

NATIVE OIL-PALM PLOTS—NJALA.

13. The following yields were recorded from the native oil-palm plots at Njala this year. The data have been collected in the same way as from the Nigerian Oil-palm plantation for purposes of comparison.

Hanoi Plot.—One hundred and two trees planted out from the nursery in August, 1924. Seventy-two trees bore fruit in 1929.

Number of heads harvested.	Weight of heads harvested.	Weight of fruit harvested.
376	451 lb.	230 lb.

Kawei Plot.—One hundred and fifty-six trees planted out from the nursery in August, 1924. One hundred and twenty-four trees bore fruit in 1929.

Number of heads harvested.	Weight of heads harvested.	Weight of fruit harvested.
760	1,473 lb.	711 lb.

Kpolei Plot.—Seventy-four trees planted out from the nursery in September, 1925. Sixteen trees bore fruit in 1929.

Number of heads harvested.	Weight of heads harvested.	Weight of fruit harvested.
61	80 lb.	36 lb.

Angola Palms.—Six trees planted out from the nursery in August, 1926. Five trees bore fruit in 1929.

Number of heads harvested.	Weight of heads harvested.	Weight of fruit harvested.
22	20 lb.	9 lb.

19. As with the Nigerian Oil-palms, which came from thin shelled fruit, these native oil-palms have not all come up true to type. Especially is this so of the Henoi palms. The "Henoi" oil palm has a thin-shelled fruit, but most of the trees on the Henoi plot which was sown from this thin-shelled type of seed, have produced fruit with a thick shell like the common native "Kawei" type. There is considerable variation in the fruits from the six trees of Angola palms, fruit from one tree being fairly thin-shelled, from another thick-shelled, and from another of an intermediate thickness.

NIGERIAN OIL-PALM PLANTATION—NJALA.

20. This plot is now in its ninth year after planting.

21. Of the three hundred and twenty trees which have been borne fruit, three hundred and eleven bore fruit in 1929. The yield for 1929 was as follows:—

Number of heads harvested.	Weight of heads harvested.	Weight of fruit harvested.
1,917	22,185 lb.	12,575 lb.

22. The yield for the two main types for 1929 was:—

Thick-shelled type (one hundred and fifty-three trees bearing fruit in 1929)

Number of heads harvested.	Weight of heads harvested.	Weight of fruit harvested.
945	11,903 lb.	7,395 lb.

Thin-shelled type (one hundred and forty-one trees bearing fruit in 1929).

Number of heads harvested.	Weight of heads harvested.	Weight of fruit harvested.
866	9,077 lb.	4,511 lb.

23. The average weight of fruit produced per bearing tree where planted seventy-five to the acre, for the two main types for 1929 was:—

Thick-shelled	...	...	...	...	48 lb. 6 oz.
Thin-shelled	...	...	...	...	32 „ „

24. There was thus a slightly smaller yield in 1929 than in 1928, from the whole plantation and from each of the separate types of trees. The decrease in number of heads harvested is considerable, 372 heads less being harvested from the plot in 1929. This may be due to a large number of the trees "resting" after the large yields of 1928. The yield during the months of January—April was greater than in the corresponding months in 1928, but during the remaining months the yield was much less than in 1928, the yield for May and June especially being much less than last year.

25. Despite the fact that 167 fewer heads of the thick-shelled type were harvested this year, the total yield from this group of trees is only slightly less than in 1928, and the average weight of head and of fruit per head for this type reached the high figures of 19 lb. 3 oz. and 12 lb. 3 oz. respectively in November. The proportion of fruit to head for this type was very much the same as last year; round about 60 per cent.

26. On the other hand, the proportion of fruit to head for the thin-shelled typed was very low this year, often being under 50 per cent. The decrease from 1928 in yield for this type is considerably greater than for the thick-shelled type.

27. As in previous years, there was in 1929 a higher proportion of high yielding trees in the thick-shelled than in the thin-shelled group. The highest yielding thick-shelled type tree in 1929 gave 133 lb. of fruit, compared with 100 lb. for the highest yielding tree of the thin-shelled type.

28. Although the tree with the highest total yield for the four years 1926–1929 is a thick-shelled type tree which has given 367 lb. of fruit, as compared with 286 lb. for the highest yielding tree of the thin-shelled type, the latter type is the more valuable because of the higher proportion of oil in the fruit.

29. The total number of male inflorescences coming into flower in 1929 was more than twice the number for 1928, the increase being especially great in the latter months of the year.

30. A report on the history and data of the Nigerian Oil-palm plantation collected up to 1928 was published in 1929 as Bulletin No. 7 of the Department.

F. C. DEIGHTON,
Mycologist.

AGRICULTURAL DEPARTMENT,
NJALA,
26th February, 1930.

APPENDIX VII.

ANNUAL REPORT OF THE AGRICULTURAL INSTRUCTOR. FOR THE YEAR 1929.

I have the honour to submit below my report for the year 1929.

2. *Staff*—The staff under me in this section of the Agricultural Department consists as previously of:—

- 1 Laboratory Assistant
- 1 Laboratory Boy
- 1 Sergeant Drill Instructor.

3. *Number of Apprentices in Training*.—During the year there were nine apprentices undergoing training, four in the second year of their period of instruction and five in the third.

4. *Work covered*.—The course followed the lines of the programme outlined in previous reports and there were no important alterations made. As previously the work was divided into three main sections, *viz.*, Agriculture, Agricultural Botany and Agricultural Chemistry. The two last named are intended to cover all the essential elementary natural science. An effort was made to provide a somewhat better experience in connection with the permanent plantations available at Njala, but it is felt this branch is still a weakness in the training.

5. Special experimental work was continued, and the experience gained by certain of the apprentices in this should prove of value.

6. *Sessional Examination*.—The examination took place in September and October, and as usual papers were set in the three branches of the theoretical work, together with a practical test in Agriculture conducted on the farm. The third year examination constituted the qualifying test for promotion to Agricultural Assistants. The papers handed in have been graded and submitted for the approval of the Honourable Director of Agriculture, but at the time of writing the results are not to hand.

7. *Progress*.—Good progress was made throughout the year, particularly in the case of the second year group.

8. *Physical Training and Games*.—The Sergeant Drill Instructor has done excellent work and this has had a marked effect upon the physique, general discipline, and smartness of the apprentices. There is no doubt in my opinion that this section of the training is very beneficial both mentally and physically to young men of the type of the agricultural apprentices, and the idea could well be extended.

9. Although the small number of apprentices has made it somewhat difficult to conduct the sports club successfully, the keen interest in games has continued. Certain members of the African Staff outside the apprentices remained faithful to the club throughout the year, and it was thus possible for a few matches to be arranged. At a recent general meeting the Treasurer showed a substantial balance in hand.

10. *Model Farm*.—At the beginning of the year it became necessary to relinquish part of the farm on account of the reduced number of apprentices. The remainder which consists of approximately eight acres has been kept in good condition. In addition a breeding plot of half an acre for Quande Cotton, and a number of plots varying between half an acre and a one-fourth of an acre for bulked strains of this cotton, were established outside the Model Farm. A certain amount of labour which had been provided for in the estimates was utilized in addition to the work of the Apprentices themselves.

11. *Quande Cotton*.—As already mentioned the work of selecting this cotton was continued. Definite improvement has been obtained, and encouraging reports have been received from the British Cotton Growing Association. Among other difficulties the lack of a hand gin has been greatly felt, and it has resulted in the late sowing of the bulked strains which have consequently never been grown under the best conditions.

12. A report on the progress on the above work up to the end of May 1929 was submitted in my A.I. 125/2/25. "Progress of attempt to improve Quande Cotton."

13. *Rotation of Crops*.—Since 1925 each apprentice has cultivated a one-fourth acre plot. These plots have been under various rotations which it was desired to test. Careful records have been kept, and some of the rotations appear to be proving successful.

14. *Pasture Grasses*.—Two areas of grass were established with a view to continuance of the investigation commenced in 1928 (*see* Annual Report 1928, paragraphs 18 to 21). One of these areas contains most of the grasses being tested, and the other consists of drills and spaced plants (*see* A.I. 33/19/1928. "Suggestions for further work on grasses"). It was not found possible to commence the experimental work on these plots.

15. From work carried out in April and May of this year it was found that *Paspalum conjugatum* is a palatable grass, at any rate at that particular time, and this fact should be borne in mind in connection with any further investigations which may be undertaken.

16. *Ground-nuts*.—Experiments were carried out to attempt to ascertain the suitability of "Konnoh" Ground-nuts in an area where Rosette disease is very prevalent. The results are not yet to hand, but there are indications which lead to the supposition that this type of ground-nut does not display greater resistance to the disease. The "Konnoh" ground-nuts are, however, somewhat earlier maturing than the usual native type and are therefore probably more suitable for use where the disease is prevalent. Much better yields of ground-nuts have been obtained from earlier planting, and it is thought that the quicker maturing quality of the "Konnoh" ground-nut should give it an advantage.

17. This type of ground-nut is distinctly different from the ordinary variety, and it has been observed in several different parts of the country. It is suggested that further trials should be made.

18. *Sheep*.—A flock of ten sheep was originally obtained for the purpose of testing the effect of folding the animals on young rice, (*see* my Annual Report for 1928, pages 5, 6 and 7). After the experiment the sheep were retained to provide a demonstration in the management of a flock, and to attempt improvement by selection. Very little progress has been made towards the latter object owing to the difficulty of disposing of undesirable animals, and the small opportunity for obtaining suitable stock.

19. The flock now numbers twenty-one. There has been considerable loss of lambs during the past wet season, and from the symptoms shown and observations made it is believed that the trouble is probably due to some form of intestinal worm. Some good could possibly be done by controlling the lambing season and arranging for it to fall at a more suitable time of the year.

D. C. EDWARDS,
Agricultural Instructor.

APPENDIX VIII.

ANNUAL REPORT OF THE INSPECTOR OF PLANTS AND PRODUCE.

FOR THE YEAR 1929.

I have the honour to submit the report of the Inspection Branch of the Agricultural Department for the year 1929.

STAFF.

2. The Inspector of Plants and Produce, Mr. G. Tuach, proceeded on leave on the 11th April and returned to the Colony on the 7th September.

Mr. F. W. B. Allinson, Assistant Inspector of Plants and Produce acted as Inspector of Plants and Produce during that period and proceeded on leave on the 21st September.

An additional station was opened at Sulima early in the year thus bringing the total number of Inspection Stations to eleven.

TOURS OF INSPECTION.

3. Tours of inspection were made by the Inspector of Plants and Produce in the Southern Province during February, in the Kakua, Tikonko, Wundi and Jaiama chiefdoms of the Central Province during the month of October, and in the Port Loko and Kambia Districts of the Northern Province during December.

PRODUCE INSPECTION.

4. *Palm Kernels*.—There was a small but general improvement in the quality of palm kernels exported during the year. This improvement was particularly evident in the kernels exported from Bonthe. The adverse transport facilities which existed in the Yonni, Pujehun and Sumbuya stations have now been overcome. Roads have been pushed through from these stations down to navigable ports of the river. This has done away with the necessity of storing kernels throughout the dry season with the result that the loss in weight previously experienced has been reduced to a minimum.

5. There was also an appreciable increase in the oil content of palm kernels shipped from Bonthe during the year. Shipments made towards the end of the year showed oil contents as high as 51 per cent. This is satisfactory as an increase in oil content adds very materially to the value of the produce.

6. The trade in palm kernels suffered a severe set back during the year owing to the falling away in price and in consequence the exports from the Colony were considerably less than the previous year. During the first six months of the year the exports, compared with the same period in 1928, had dropped 10,000 tons. Fortunately, however, during the second half of the year the exports recovered and by the end of the year the total decrease was reduced to 6,900 tons.

The total exports of palm kernels for the year 1929 was 60,205 tons valued at £877,308, as against 67,105 tons valued at £1,150,649 in 1928.

7. *Palm Oil*.—There was an increase of about 300 tons in the exports of palm oil and prices compared very favourably with those of 1928. A good standard was maintained throughout the year. No cases of adulteration were reported.

The total exports for the year amounted to 2,845 tons valued at £75,153 as against 2,525 tons valued at £66,445 in 1928.

8. *Piassava*.—There was a decided improvement noticed in the quality of this product during the year under review, particularly in the Mano Salija and Sulima areas.

The exports, however, were very much less than in 1928 which was a record year. Several opinions have been expressed as to the cause of this decrease and in many instances it was attributed to the rigid enforcement of the laws governing this product. It is admitted that to some extent inspection has been responsible for the decrease in exports as compared with 1928. This of course was inevitable as a very large proportion of the 1928 exports particularly from Sulima and Mano Salija consisted of useless fibre; but when it is taken into consideration that the prices realized for Sulima piassava in 1928 was approximately £5 per ton less than for the Liberian product, it was obvious that some rigid steps had to be taken to increase the value of Sulima piassava, and the only way to do so was to prevent as far as possible useless fibre being placed on the market.

9. That the efforts of the Inspection Branch were successful in improving the quality and value of Sulima piassava is amply proved by information given to the writer by export merchants at Sulima, to the effect that in 1928 they received only £17 to £18 per ton for their piassava on the Home markets. In 1929 they received £24 per ton and the prices obtained gradually increased to over £30 per ton before the end of the year.

In fact the prices obtained for the better parcels of Sulima piassava compared very favourably with the Sherbro quality which had heretofore been recognized as being a superior grade.

10. The total exports from the Colony in 1929 amounted to 1,232 tons valued at £17,177 as against 3,189 tons valued at £40,369 in 1928. It can be seen from this that the local price of piassava in 1929 was approximately £2 per ton more than in 1928.

11. *Ginger*.—The exports of ginger rose from 20,431 cwt. valued at £30,582 in 1928 to 30,966 cwt. (£59,308) in 1929. The whole of the ginger exported was rough scraped ginger. No peeled and bleached ginger was prepared as no inducement to do so in the way of higher prices was given to the producer. The laws governing the quality of ginger allowed to be exported were rigidly enforced, however, and a good standard of quality was maintained.

PROSECUTIONS.

12. The number of persons reported for offences against the Native Produce Ordinance was considerably less than in the previous year. The following is a return showing the number of persons reported by the Inspection Staff and the fines inflicted during the year.

Number reported	...	...	...	...	...	119
Number convicted	...	...	...	...	...	93
Number discharged	...	...	...	...	...	18
Number not dealt with at end of year	...	...	...	...	...	8
Total amount of fines inflicted £179 6s. 0d.						

WEIGHTS AND MEASURES.

13. The verification of weights and measures was carried out by the Inspector of Plants and Produce in conjunction with his ordinary duties whenever possible. During the year, 194 certificates of justness were issued while the fees collected amounted to a total sum of £31 0s. 3d.

Two convictions were obtained against traders for using unjust scales. A fine of £2 was imposed in each case.

In conclusion the writer desires to express his appreciation of the manner in which the staff of the Inspection Branch have carried out their duties during the year.

G. TUACH,
Inspector of Plants and Produce.

31st March, 1930.

Appendix IX.

A—RAINFALL DATA, 1929.

MONTH.	Balkann.	Bo.	Bonthe.	Daru.	Hill Stn.	Kabala.	Kaiyima.	Kissy.	Makeni.	Makump.	Moyamba.	Newton.	Njala.	Pujehun.
January87	.44	1.27	Nil	...	0.18	Nil	Nil	...	Trace	...	.76	0.22
February	...	2.92	.84	3.92	.01	...	3.33	...	...	1.20	.58	...	.31	1.33
March	...	2.43	4.36	8.27	.39	4.44	3.65	.33	.32	1.74	1.29	...	2.53	5.49
April	...	3.65	4.72	10.07	.60	4.35	4.44	.95	3.21	2.87	4.35	...	3.98	10.62
May	...	12.76	15.24	16.62	10.41	6.61	9.43	7.11	7.56	5.28	7.47	8.40	10.55	18.25
June	...	20.65	25.84	22.83	35.76	12.02	9.76	23.69	16.75	10.30	17.10	24.22	17.04	17.94
July	...	16.52	25.64	26.74	60.39	9.36	13.70	38.78	25.17	17.25	21.56	27.13	12.85	19.63
August	...	16.81	22.76	31.50	37.86	13.91	16.98	28.89	12.79	21.09	22.28	29.93	12.61	22.87
September	...	27.67	17.54	20.07	42.78	14.62	24.90	24.08	18.58	30.54	25.61	26.30	23.60	27.33
October	...	11.41	17.84	11.36	12.92	12.59	14.64	10.65	17.54	19.67	15.09	12.54	14.76	11.83
November	...	5.30	5.12	7.53	6.36	.39	8.31	5.56	5.44	5.12	7.17	5.34	9.01	4.31
December90	1.56	1.25	.23	...	.43	.36	.23	.87	.05	.24	.16	...
Total	...	123.24	141.90	161.43	207.71	78.29	109.75	140.40	107.59	115.93	122.55	134.10		139.82

B—METEOROLOGICAL DATA FOR NJALA, 1929.

MONTH.	Shade.		Total Rainfall for Month.	
	Maximum.	Minimum.		
January76
February31
March	2.53
April	3.98
May	10.55
June	17.04
July	12.85
August	12.61
September	23.60
October	14.76
November	9.01
December16

